Scientific and Statistical Committee

Pacific Fishery Management Council
DoubleTree by Hilton Spokane City Center
Salon I
322 N Spokane Falls Court
Spokane, WA 99201
509-455-9600

September 8-9, 2023

Members in Attendance

Dr. Cheryl Barnes, Oregon State University, Newport, OR
Dr. John Budrick, California Department of Fish and Wildlife, San Carlos, CA
Mr. Alan Byrne, Idaho Department of Fish and Game, Boise, ID
Dr. John Field, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Chris Free, University of California Santa Barbara, Santa Barbara, CA
Dr. Michael Hinton, San Diego, CA
Dr. Dan Holland (SSC Chair), National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Kristin Marshall, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Tommy Moore, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Matthew Reimer, University of California Davis, Davis, CA
Dr. William Satterthwaite, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Jason Schaffler (SSC Vice-Chair), Muckleshoot Indian Tribe, Auburn, WA
Dr. Ole Shelton, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Cameron Speir, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA

Members Absent

Dr. Owen Hamel, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. André Punt, University of Washington, Seattle, WA

SSC Recusals for the September 2023 Meeting		
SSC Member	**Issue**	**Reason**
Dr. Tommy Moore	H.9 Membership Appointments and Council Operating Procedures	Dr. Moore assisted in soliciting the candidates nominated and under review
Dr. John Field	G.2 Adopt Stock Assessments SSC Agenda G.2.f Black rockfish in California	Dr. Field supervises assessment authors
Dr. John Budrick	G.2 Adopt Stock Assessments SSC Agenda G.2.g Canary rockfish	Dr. Budrick is a co-author on the assessment
Dr. Cheryl Barnes	G.2 Adopt Stock Assessments SSC Agenda G.2.f Black rockfish in California	Dr. Barnes is a co-author on the assessment
Dr. Tien-Shui Tsou	G.2 Adopt Stock Assessments SSC Agenda G.2.d Black rockfish in Washington and G.2.g Canary rockfish	Dr. Tsou is a co-author on the assessments

SSC Administrative Matters

Dr. Dan Holland (SSC Chair) called the meeting to order at 0800. Mr. Merrick Burden briefed the Scientific and Statistical Committee (SSC) on their tasks at this meeting. The September 2023 SSC agenda was approved, with the addition of Agenda Item H.5 under open discussion. Several suggested edits were made to the June 2023 SSC Minutes and adopted as final. Thus, the September 2023 briefing book version of the June 2023 SSC Minutes will be updated to reflect SSC approved changes and the final document will be posted to the SSC minutes archive website. Subcommittee assignments were confirmed with no modifications.

H. Administrative Matters

5. National Marine Fisheries Service Geographic Strategic Plan and Regional Equity and Environmental Justice Implementation Plan

The Scientific and Statistical Committee (SSC) discussed the National Marine Fisheries Service National Equity and Environmental Justice (EEJ) Strategy (Agenda Item H.5 Attachment 3).

The incorporation of Traditional Ecological Knowledge into the decision-making process needs to be better defined, including directed outreach to Tribal communities to build working relationships. This should be accompanied by training for those involved in the outreach and decision-making, preferably led by Tribal members. It is unclear whether incorporation should follow a national strategy or if a regional strategy tailored to the local Tribal communities would be a better approach. Recruitment of individuals into the Council process from underserved communities (such as Tribes) should begin as early as possible and not be limited to university or college students.

The EEJ Strategy proposes measuring progress on several research and monitoring actions in terms of the number of studies or projects conducted. Although the number of projects is the beginning of a metric to define success, evaluating effectiveness of these actions will ultimately

require additional measures. Implementing the EEJ strategy will require high quality social and economic analyses to better understand the demographics of existing Council participants and regional stakeholders, evaluate the distributional impacts of policy, understand climate impacts on communities, and monitor environmental justice concerns. Prioritization of social science and other research that helps to address equity issues can be accomplished through the Research and Data Needs process.

Much of the labor related to EEJ is currently being taken on by individuals from historically underrepresented groups already engaged in the Council process. In many cases, these same individuals lead and report EEJ discussions in advisory bodies and serve on the EEJ committee. The SSC reiterates the need to consult outside experts in EEJ to develop and implement a holistic EEJ strategy that includes meaningful participation of the whole community the Council serves.

SSC Notes

Marine Resource Education Program - https://www.gmri.org/projects/marine-resource-education-program-mrep/

C. Administrative Matters

7. Membership Appointments and Council Operating Procedures (SSC Closed Session)

C. Salmon Management

2. Methodology Review - Final Topic Selection

Michael O'Farrell from the Salmon Technical Team (STT) and Jon Carey from the Model Evaluation Workgroup (MEW and STT) briefed the Scientific and Statistical Committee (SSC) on proposed topics for the 2023 Salmon Methodology Review scheduled for October 11-12, 2023. The topics that were adopted for potential review at the April 2023 Council meeting were:

1. Consider technical modifications to the Sacramento River winter Chinook abundance forecast by examining whether an egg-to-fry covariate can improve forecast performance (assigned to National Marine Fisheries Service, Southwest Fisheries Science Center)
2. Review and consider improvements to methods used to model South of Falcon fisheries in the Chinook Fishery Regulation Assessment Model (assigned to MEW)
3. Explore alternative approaches for the Oregon Production Index Hatchery coho forecast (assigned to Oregon Production Index Technical Team)
4. Explore alternative forecast approaches for the Sacramento Index (assigned to STT)
5. Fishery Regulation Assessment Model (FRAM) Documentation (assigned to MEW)

Michael O'Farrell and Jon Carey reported that topics 1, 2, and 3 will be ready for review in October. Topic 4 - alternative forecast approaches for the Sacramento Index will not be ready for review, however the SSC recommends that this topic be reviewed in 2024. There is new FRAM documentation content (Topic 5), however the SSC views this as an informational report on progress made this year and does not require a rigorous review.

Materials submitted for review should be technically sound, comprehensive, clearly documented,

and identified by the author(s). Materials to be reviewed should be submitted by September 25, 2023. If this deadline cannot be met, it is the responsibility of the author(s) to contact Marlene A. Bellman, Robin Ehlke, the SSC Salmon Subcommittee Chair, and the STT Chair prior to the deadline, so arrangements can be made in a timely and cost-effective manner. The SSC plans to review reports on these topics at the November 2023 Council meeting.

In the event of a federal government shutdown, it may be difficult to complete the methodology review prior to the November Council meeting. The SSC does not recommend attempting to hold a methodology review without federal employees present. If the review cannot be held prior to the November Council meeting, it may not be possible to incorporate any methodology changes for use in the 2024 salmon management cycle.

SSC Notes

Topic 4 - alternative forecast approaches for the Sacramento Index should consider whether the method(s) are robust to changes in hatchery procedure marking protocols, and tagging as described in Supplemental CDFW Report 1. These changes in marking and tagging practices will have substantial implications for monitoring and for models used in management. Accommodating these changes will likely require methodology review in the future.

C. Salmon Management

3. Fishery Management Plan (FMP) Amendment 24

The SSC reviewed the proposed administrative amendment to the Pacific Salmon Fishery Management Plan (FMP) Section 6.6.8 - Southern Resident Killer Whale (SRKW) Management Measures.

The SSC agrees that the description of how the threshold is calculated (the first four sentences in the second paragraph of the proposed amendment) is complete and reproducible, and is an improvement over the previous language.

The SSC recommends that the last two sentences of the second paragraph, which begin with "These particular years were chosen because…" be deleted and replaced with a link to relevant SRKW Work Group Reports (PFMC 2020, as cited in Agenda Item C.3 Attachment 1, as well as November 2020 Agenda Item F.2.a Workgroup Report 1). The justification for the threshold is complex and difficult to adequately characterize in a few sentences.

The SSC identifies the need for a minor change to the language in the third paragraph: "Updates to the FRAM model will be reported by…" should be changed to "Updates to the FRAM will be reported by…"

The SSC highlights a potential mismatch in the recommended timeline for finalizing the threshold value, which may have negative consequences in some years. The proposed language recommends that recalculated threshold values be ready for Council consideration at the November meeting. However, co-managers continue to work on Fishery Regulation Assessment Model (FRAM) improvements for harvest management until January or later. If changes are made to FRAM and not incorporated into the threshold calculation, the pre-season FRAM output

will not be in the same currency as the threshold. This could lead to the threshold either not fulfilling the objective of leaving prey for SRKWs or unnecessarily constraining fisheries.

SSC Notes

FRAM undergoes minor updates annually, moderate updates on a 4-5 year cycle, and major updates every 10 years. However, if a critical need for an update is identified, moderate to major changes could occur more frequently. The implication is that the FRAM output used to generate the threshold value and harvest specification will be inconsistent fairly frequently.

The November deadline for the threshold calculation is aspirational, as much of the annual work updating FRAM is not complete by the November briefing book deadline.

G. Groundfish Management

3. Stock Assessment Methodology Review – Final Topics

The SSC reviewed a proposal for groundfish stock assessment methodology review from the Northwest Fisheries Science Center (NWFSC) and Pacific States Marine Fisheries Commission (PSMFC) regarding the use of Fourier Transformed Near-Infrared Spectrophotometry (FT-NIRS) to increase groundfish ageing throughput (Agenda Item G.3.a Supplemental NWFSC Report 1, September 2023). The NWFSC and SWFSC have begun processing samples for analysis, including species from other regions. This is part of a National Marine Fisheries Service national initiative, which brought up the question of whether a more national forum for review is more appropriate.

In the interest of evaluating the species for which the method is applicable, analysis of a broad suite of species encompassing varying life histories would be beneficial. While the focus of the proposal was stocks planned for assessment in 2025, the list of species could be expanded to encompass the diverse life histories of roundfish, rockfish, and flatfish as well as including short- and long-lived species, and easier and more difficult species to age. Understanding the factors that affect ageing with FT-NIRS may help inform the species for which the methods can be successfully attempted in the future. The SSC supports review of the proposed methods. While review of the methodology in June 2024 has been tentatively proposed, it can be delayed until late summer if additional time is needed to process otoliths and analyze the resulting data.

SSC Notes

Workshop planning had historically been tied to methodology review topic selection, but with the advent of COP 25, the focus is solely on methodology reviews. A process for selection of workshops needs to be codified in the TOR for methodology reviews or another place to clarify the process. If workshops are to be selected at the same time as methodology reviews, situation summaries and requests for proposal should include workshop topic selection as well.

It was noted that inclusion of additional flatfish in the review may be beneficial since Dover sole may not necessarily be representative on its own.

The method requires calibration with samples of known age for the species in question. If ageing with traditional methods is uncertain, this will limit the applicability of the methods.

Rates of ageing error between traditional age readers can be compared to the FT-NIRS age estimates for the same individuals to inform the relative precision of each method.

The increased use of FT-NIRS throughput for species with a relatively large numbers of otoliths will allow more time to conduct traditional ageing for species with fewer samples or complications preventing application of FT-NIRS.

The method may be most applicable to easily aged species for which the method could increase throughput and thus the sample sizes of ages in assessments informing composition and growth.

G. Groundfish Management

2. Adopt Stock Assessments

The Scientific and Statistical Committee (SSC) reviewed the benchmark stock assessments and STAR panel reports for copper rockfish in California, black rockfish in Washington, Oregon, and California, canary rockfish and petrale sole; and data-moderate assessments for rex sole and shortspine thornyhead. The SSC also reviewed recommendations from the SSC's Groundfish Subcommittee (GFSC) from their review of a limited sablefish update assessment and catch-only projections for widow rockfish and yelloweye rockfish. The SSC offers the following recommendations.

Copper rockfish in California (North+South) assessment and STAR report

The 2023 benchmark assessment of copper rockfish in California included two sub-area models split at Point Conception, California (34°27′ N lat.), with similar structure but additional sources of information relative to the two data-moderate assessments developed in the 2021 assessment cycle. Both models were well developed and well documented, and the model results were robust to a fairly broad range of alternative model structures. The results of both models were also consistent with the results of the 2021 data moderate assessments. The California-wide stock status, when the results of both models were combined, estimated that spawning output was 36.6% of the unfished level, in the precautionary zone, below the 40% management target level but above the minimum stock size threshold (MSST). However, relative spawning output in the southern model was considerably less than that in the north. The SSC recommends that efforts to keep catches proportional to regional biomass would be appropriate to avoid worsening localized depletion. The SSC endorses the 2023 full benchmark assessments of copper rockfish in California north and south of Point Conception as providing the best scientific information available and suitable for informing management decisions. The SSC endorses both sub-area assessments as the best scientific information available (BSIA). The SSC recommends that both assessments be assigned to category 1 with a sigma of 0.5. The SSC recommends that the next copper rockfish assessment in California be an update, unless new data or research is available.

Rex sole assessment and STAR report

The 2023 rex sole assessment was a length-based data-moderate assessment. Rex sole was last assessed in 2015 using an index-based data-moderate approach. The current assessment was structured into a single area with two fleets and used fishery-independent data from the Triennial survey and West Coast Groundfish Bottom Trawl Survey (WCGBTS). The current assessment estimates the stock is at 76.1% of unfished spawning output in 2023, above the 25% management target level, consistent with the result of the 2013 assessment. Major uncertainties

included natural mortality, growth, and WCGBTS catchability (q). Research and data needs include additional age data to inform growth and longevity along with ageing error. There is also a need to better understand catchability for WCGBTS and update maturity, fecundity, and other biological information. The SSC endorses the 2023 stock assessment as BSIA and recommends a category 2 designation with a default sigma of 1.0. The SSC recommends that the next assessment be a full assessment assuming additional age data is available to inform growth and improved methods are developed for estimating the WCGBTS q.

Shortspine thornyhead assessment and STAR report

The 2023 shortspine thornyhead assessment was a length-based data-moderate assessment. It covered the entire U.S. West Coast and uses fishery-dependent length compositions and discard data as well as length compositions and indices of abundance from the Triennial survey and WCGBTS. Changes from the most recent assessment in 2013 included reducing the number of fishing fleets to three, including length data from the surveys and fishery, and updating estimates of catchability, growth, maturity, fecundity, and natural mortality. The current assessment estimates that the relative spawning output of the stock is in the precautionary zone, below the management target of 40% of unfished levels at 39.4% in 2023. Although recruitment has been relatively stable, spawning output declined considerably from the 1970s to the late 2010s. Major uncertainties included insufficient age composition data and a lack of reliable ageing methods, both of which reduce confidence in estimates of growth, maturity, and natural mortality. There was also a lack of concurrence among model-based and design-based indices in the latter portion of the time series (2021 and 2022). Information about habitat associations, movement, and stock structure is lacking. The SSC endorses the 2023 stock assessment as BSIA and recommends a category 2 designation with a default sigma of 1.0. The SSC recommends that the next assessment be an update assessment unless new ageing information becomes available.

Black rockfish in Washington assessment and STAR report

The 2023 benchmark assessment for black rockfish off Washington resulted in a relative spawning output of 45.1%, above the management target of 40%. The model had reasonable fits to data and lacked notable retrospective patterns. A major improvement since the 2015 assessment was a more refined assignment of historical catches to Oregon and Washington. Unfished recruitment (R_0) was the axis of uncertainty for the decision tables. There were no substantial changes to the assessment following STAR Panel review. The SSC endorses this assessment as BSIA, recommends that the stock be assigned to a category 1 with default sigma of 0.5, and supports an update for the next assessment.

Black rockfish in Oregon assessment and STAR report

The 2023 benchmark assessment for black rockfish off Oregon had reasonable fits to data and lacked notable retrospective patterns. Major modifications from the 2015 assessment were the improvement of ageing error estimates, a shift from biological to functional maturity, and addition of an absolute estimate of abundance from Oregon Department of Fish and Wildlife's acoustic-visual (AV) survey. Catchability (q) for the acoustic-visual survey represented the axis of uncertainty for decision tables. Research recommendations include a continuation of the AV survey, which currently provides a single year of data and cannot be used to infer trends in absolute abundance. Relative spawning output was 45.2%, above the management target of 40%.

The SSC endorses this assessment as BSIA, recommends that the stock be assigned to category 1 with default sigma of 0.5, and supports a benchmark assessment the next time this stock is assessed to address tensions between length composition and AV survey data.

Black rockfish in California (North+Central) assessment and STAR report

The 2023 benchmark stock assessment for black rockfish in California consisted of two sub-area models for northern and central areas to approximate spatial and temporal variation in size composition, exploitation history, recruitment, and other factors affecting population dynamics. The northern model represents the portion of the stock in U.S. waters from Point Arena (38°57.5′ N lat.) to the California-Oregon border (42° N lat.) and the central model includes U.S. waters off from Point Arena to the U.S.-Mexico border. Black rockfish are rare south of Point Conception (34°27′ N lat.), thus data informing the central model are primarily from the region between Point Conception and Point Arena. Natural mortality is the primary source of uncertainty of the assessment. The two sub-area assessments estimate 2023 OFL contributions to be 203.8 mt in the northern area and 48.5 mt in the central area. Statewide, following the stock definition in Amendment 31 for black rockfish, the stock is at 37.7% of unfished spawning output in 2023, in the precautionary zone, below the 40% management target level but above the MSST. The relative spawning output trajectory was very similar to that estimated in the 2015 assessment and has shown recent increases. The current assessment is technically sound, draws upon multiple fishery-dependent and -independent data sources, and results in robust estimates of depletion. The SSC supports the modeling approach and the basis for the decision table. The SSC endorses the 2023 sub-area assessments of black rockfish in California as BSIA. The SSC recommends that both sub-area assessments be assigned category 1 with a default sigma of 0.5. The SSC recommends the next assessment be a full assessment to account for migration rates between the northern and central areas and spatially-explicit life history data, if available.

Canary rockfish assessment and STAR report

The 2023 benchmark assessment for canary rockfish encompassed a single area along the U.S. West Coast. This is a modification from the stock assessment conducted in 2015, which was spatially-explicit and reflected distinct areas for CA, OR, and WA. Five fleets per state and three fishery-independent indices of abundance (Triennial survey, WCGBTS, and rockfish pre-recruit surveys) were included in the model, most with sex-specific selectivity. Natural mortality was updated to be age-invariant. The relative spawning output is estimated to be 35.1%, placing it in the precautionary zone between the management target of 40% and the MSST of 25%. This assessment estimates a lower ratio of current to unfished biomass (depletion) than the 2015 assessment and suggests that the stock never achieved the rebuilding target. Sensitivity analyses indicate that differences between the 2015 and 2023 assessment models were primarily due to how natural mortality and selectivity were parameterized. The SSC supports the modeling approach and agrees that the model fits the data well. The SSC endorses the 2023 stock assessment as BSIA, supports a category 1 designation for canary rockfish with a default sigma of 0.5, and recommends that the next assessment be an update assessment unless new information becomes available to redefine natural mortality and/or steepness.

Petrale sole assessment and STAR report

The 2023 petrale sole benchmark stock assessment modeled a single stock with fisheries stratified as north (Washington and Oregon) and south (California). The last full assessment was in 2013, with update assessments in 2015 and 2019. Historical catches were updated for Washington state, and these combined with reductions in more recent discard estimates were key contributing factors to changes in stock biomass relative to past assessments. The fraction of unfished spawning output is estimated to be 33.6% in 2023, which is above the management target of 25% for flatfish stocks. The primary axis of uncertainty is female natural mortality. Spawning output is projected to decline in the future but remains above the MSST under all projections from the high and low states of nature. This decline is due to poor recruitment in recent years, which contrasts with the high recruitment event from 2006 to 2008 that resulted in rebuilding of the stock from overfished conditions. An environmental index of recruitment for petrale sole was developed but required additional review and was not included in the base model. The SSC supports the modeling approach, agrees that the model fits the data well, and agrees with the conclusions of the 2023 petrale sole assessment. The SSC endorses the 2023 stock assessment of petrale sole as BSIA, recommends the stock assessment be designated as category 1 with a default sigma of 0.5, and suggests that the next assessment be an update assessment.

Sablefish limited update assessment

The 2023 stock assessment update for sablefish was motivated by observations of high recruitment in 2020 and 2021 in the WCGBTS, which observes age-0 and age-1 sablefish. The update was limited in scope and included ages from the WCGBTS, but not from the commercial fishery. The assessment incorporates an environmental index for recruitment, which was also updated. The assessment estimates the stock is 63% of unfished biomass in 2023, above the 40% management target. Fishery information and anecdotal accounts regarding high bycatch of small sablefish support the existence of one or more strong cohorts entering the population. However, there is greater uncertainty in the strength of these recent year-classes than for older year-classes with more years of observations to verify the year-class strength. The SSC endorses the 2023 sablefish update assessment as BSIA. The SSC recommends the stock assessment be designated as a category 1 assessment with a default sigma of 0.5. The SSC recommends that the next sablefish assessment be a full assessment given the uncertainty and limited observations of recent cohorts, additional age data from the fishery, and the potential effects of density dependence at high abundance.

Catch-only projections for Widow rockfish and Yelloweye rockfish

The SSC discussed the catch-only projections for widow rockfish and yelloweye rockfish and had no technical concerns. The widow rockfish catch-only projection was based on the 2019 update assessment. Given the small differences in actual versus assumed catch, the percent of unfished spawning biomass in 2025 only increased slightly from 75.6% to 81.1% with the updated values, and the ABC increased from 10,533 mt to 11,237 mt. The yelloweye rockfish catch-only projection was based on the 2017 rebuilding analysis. Differences between actual versus assumed catch were small and there was a corresponding small increase in the 2025 projected ABC from 76.5 to 87.2 mt. The rebuilding target of 40% unfished spawning biomass is projected to be reached in 2028. The SSC endorses both catch projections as BSIA.

SSC Notes

Copper rockfish: One question to flag for future consideration or research is whether there might be some level of difference in depletion between or among areas modeled separately within a defined "stock" that might imply that stock definitions are mis-specified. Discussing this question would be worthwhile before or during the next round of stock structure discussions.

Sablefish: The environmental index suggests conditions that would support strong sablefish recruitment in only one of the two years for which the assessment model estimates a large cohort.

With respect to model-estimated sigma values, there is a need for consistency in the sigmas produced by stock assessment teams and the basis for the default sigma values associated with different categories of stock assessment; for example uncertainty in OFL versus terminal biomass/spawning output, or what year the OFL uncertainty should be calculated for. This is something that should be discussed in greater detail during the post-mortem review meeting, and there could be a need or benefit in greater clarity in the Terms of Reference as well.

I. Highly Migratory Species

5. Highly Migratory Species Essential Fish Habitat (EFH) Amendment - Preliminary

The Scientific and Statistical Committee (SSC) reviewed proposed modifications to Highly Migratory Species (HMS) Essential Fish Habitat (EFH) (Agenda Item I.5 Attachment 1), presented by Kerry Griffin, Eric Chavez, and Nicole Nasby-Lucas. The proposed modifications are principally in the delineation of EFH within the U.S. Exclusive Economic Zone (EEZ), though there are minor updates on life history summaries and distributions by life stage within geographical regions of the EEZ based on recent publications and available data.

The SSC finds that the scientific literature and compiled information represent an adequate basis for making decisions concerning EFH and recommends its use to designate HMS EFH.

The SSC noted the lack of information to support model-based EFH designations. The distribution maps proposed for HMS EFH are from data compiled by the International Union for Conservation for Nature rather than from species distribution models, as was previously the case for HMS EFH. The current EFH is identified qualitatively based on expert opinion. This is consistent with HMS EFH developed by other Councils, but the SSC recommends continued model development and inclusion of additional data sources, e.g. fisheries data, to establish clear standards.

Fishing impacts focused on prey of HMS and were considered to be minor. The HMS EFH did not include reference to the fact that fisheries that target a multitude of prey species are specifically prohibited by the Council. The SSC recommends that this reference be included.

Potential impacts of offshore wind projects on EFH were not discussed in detail in Agenda Item I.5 Attachment 1 (see Agenda Item I.5 Attachment 1, Table 1: Non-fishing activities proposed for inclusion in the HMS FMP). The SSC recommends that offshore wind projects be included in the HMS FMP as a non-fishing activity that would potentially adversely affect EFH.

Proposal reviews by NMFS can incorporate impacts in addition to those listed in the HMS EFH.

G. Groundfish Management

6. Initial Harvest Specifications and Management Measures Actions for 2025-2026

The SSC reviewed Agenda Item G.6, Supplemental Revised Attachment 1 and Supplemental Revised Attachment 2, and received a report from the SSC Groundfish Subcommittee (GFSC) that is appended to this report. These attachments provide 1) the overfishing limits (OFLs) for 2025 and 2026 under default harvest control rules, 2) the category designation for each stock and area, and 3) the constant or time-varying sigmas (i.e., increasing scientific uncertainty with the age of the assessment) used to calculate annual acceptable biological catch (ABC) buffers.

OFLs were obtained directly from 2023 stock assessments, stock assessment updates, and catch-only projections, and from previously published and adopted assessments and projections. The SSC focused the review on stocks that are highlighted in yellow and blue in Agenda Item G.6 Supplemental Revised Attachment 1, and provides updated values in Table 1 (2025) and Table 2 (2026) of this statement. Several OFL and ABC values are not yet available for adoption, for reasons specified in the GFSC report and reiterated below.

The SSC conditionally endorses the values in Agenda Item G.6 Supplemental Revised Attachment 1, and those in Table 1 and Table 2 of this statement, with the following notes and revisions:

- The category designations for Oregon black rockfish and California copper rockfish should be category 1, not category 2.
- The OFL and ABC values for greenspotted rockfish are based on an assessment adopted in 2011, but year-specific projections are not available for 2025 and 2026. The SSC recommends rolling over 2024 values for the OFL and ABC in both 2025 and 2026.
- The rex sole OFL and ABC for 2025 are based on a P* of 0.40, which results in a 3,966 mt ABC for 2025. The OFL and ABC values for 2026 based on this P* value are not yet available but will be produced for the November meeting.
- The yellowtail rockfish OFL and ABC for north of 40°10′ N. lat. are not yet available. The SSC concurs with the GFSC recommendation that a catch-only projection be requested of the NWFSC by the Council at this meeting, for review and adoption at the November 2023 meeting.
- The quillback rockfish OFL and ABC will be based on the rebuilding analysis, which will be reviewed by the GFSC at the mop-up review (late September 2023) meeting and the SSC in November.
- The 2019 catch-only projection for chilipepper rockfish incorrectly used the 2015 assessment update rather than the 2017 catch-only projection that had corrected errors in historical catches. Similar to the SSC recommendation for yellowtail rockfish, the SSC recommends that the Council request that the NWFSC develop a catch-only projection for chilipepper rockfish, for review and adoption at the November meeting.

- For vermilion rockfish, the Council adopted new stock definitions under Amendment 31, with Washington and Oregon vermilion rockfish as the northern stock and California vermilion rockfish as the southern stock. OFLs and ABCs for the northern stock were developed based on the approach outlined in the GFSC report. Those values are not yet available for the southern stock, but will be produced and reviewed at the November meeting.
- Copper rockfish in California was defined as one statewide stock under Amendment 31. The two sub-area assessments have the same category designation and buffer, thus OFLs and ABCs are based on combining the stock-wide values from the 2023 sub-area assessments.
- The projected 2025 OFL for sablefish, based on the 2023 limited update assessment, is more than triple the amount of the adopted 2024 OFL. The Council should be aware of the sensitivity to estimates of recent large recruitments when considering the appropriate P* value for these ABC values.

The SSC will review the additional values needed for the 2025-2026 Harvest Specifications and Management Measures cycle in November 2023. The SSC expresses appreciation to the Northwest Fisheries Science Center and Southwest Fisheries Science Center stock assessors and their coauthors for completing the assessments and the additional analyses needed to provide management advice for the specifications process.

SSC Notes

Between now and November 2023, members of the GFSC will double check values that are listed to the 10th of a ton but for which that value is 0, to ensure we do not inadvertently propagate rounding errors.

For greenspotted rockfish, the GFSC initially discussed using equilibrium MSY as a basis for adopting a "static" category 3 OFL and ABC values, given that the assessment is from 2011. However, following the GFSC meeting it was pointed out that because the projections for greenspotted spawning output suggested that the population was only barely at target levels by 2025, this approach would actually result in an increase in the OFL and ABC values for this stock relative to the OFL and ABC values adopted for the 2023-2024 management cycle. This is not consistent with the assumption of greater uncertainty for a more outdated assessment. Consequently, in the absence of updated projections (which are tricky for this assessment), the SSC recommends rolling over 2024 values for the OFL and ABC in both 2025 and 2026. The rate of increase in spawning output had been slowing as the model approached the end of the projection period, indicating that this would result in OFL and ABC values very close to, but very slightly below, those associated with rolling over the 2024 values.

The rex sole assessment includes projections for an assumed P of 0.45, but the previous Council adopted P* was 0.40.*

For yellowtail rockfish, if the catch-only projection could be provided earlier, the GFSC could potentially review during the mop up review. There would likely not be a need for a full two-week review period given the concise nature of these documents. The same holds true for the chilipepper catch-only projection.

For vermilion rockfish, the approach for developing OFL and ABC values for stocks represented by multiple assessments with different sigma values was based on the June 2023 H.3.a NWFSC Report. The SSC concurred with this approach in its June 2023 statement on H.3.

The SSC discussed that splitnose rockfish OFLs and ABCs are based on projections from 2009 assessment that are probably also "too stale" to continue to rely on. However, in the absence of a formal approach to transition from projections to an alternative "category 3" approach for stale assessments (such as recommending that equilibrium MSY be adopted for assessments greater than 15 years old), these values are acceptable for this management cycle. There is a need to develop clearer guidelines on when an assessment is "too stale" to continue to rely on either the original or updated catch only projections. The SSC should flag this issue at the process review (aka post-mortem) meeting and/or consider this further during the stock assessment prioritization effort.

Table 1. 2025 harvest specifications (mt) and stock category designations for west coast groundfish stocks and stock complexes under default harvest control rules. Specifications not yet available in yellow highlight. Blue highlight = defined groundfish stocks (Amendment 31).

Stock/Complex	Area	Category	P*	Buffer	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Yelloweye Rockfish	CW	1 (Year Based)	0.40	0.176	105.80	87.20	55.80	2017	OFL based on the 2023 catch-only update of the 2017 rebuilding analysis (Table 1, Agenda Item G.2 Supp Revised Attachment 15 Sept 2023).
Black Rockfish	WA	1 (Year Based)	0.45	0.065	261.56	244.56		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).
Black Rockfish	CA	1 (Year Based)	0.45	0.065	250.10	233.80		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 65, pg 142).
Canary Rockfish	CW	1 (Year Based)	0.45	0.065	646.93	604.88		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xvi).
Chilipepper	S of 4010	1 (Year Based)	0.45					2015	Request for catch-only projection for November 2023 (2025-2026 values).
Petrale Sole	CW	1 (Year Based)	0.45	0.065	2,518.00	2,354.00		2023	OFL projected using a 30% SPR harvest rate in the 2023 full assessment (Table 30, pg 75).
Sablefish	CW	1 (Year Based)	0.45	0.065	39,085.00	36,545.00		2023	OFL projected using a 45% SPR harvest rate in the 2023 limited update assessment (Table vii, pg xvi).
Sablefish	S of 36	1 (Year Based)	0.45	0.065				2023	
Sablefish	N of 36	1 (Year Based)	0.45	0.065				2023	
Shortspine Thornyhead	CW	2 (Year Based)	0.40	0.238	939.75	716.09	710.84	2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 7, pg 42).
Shortspine Thornyhead	S of 3427	2 (Year Based)	0.40	0.238				2023	
Shortspine Thornyhead	N of 3427	2 (Year Based)	0.40	0.238				2023	
Widow Rockfish	CW	1 (Year Based)	0.45	0.083	12,254.00	11,237.00		2019	OFL based on the 2023 catch-only update of the 2019 update assessment (Table 2; Agenda Item G.2 Attachment 14 Sept 2023).
Yellowtail Rockfish	N of 4010	1 (Year Based)	0.45					2017	Request for catch-only projection for November 2023 (2025-2026 values).
Black Rockfish	OR	1 (Year Based)	0.45	0.065	367.50	343.62		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).

Stock/Complex	Area	Category	P*	Buffer	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Copper Rockfish	N of 42	2 (Year Based)	0.45	0.143	19.06	16.34	16.34	2021	OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 5 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).
Copper Rockfish	CA	1 (Year Based)	0.45	0.065	143.50	134.10	131.90	2023	OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (Table xiv, pg xxvii).
Copper	42 - 4010	1 (Year Based)	0.45	0.065			6.80	2023	
Copper	S of 4010	1 (Year Based)	0.45	0.065			125.00	2023	
Quillback	42 - 4010	2 (Year Based)	0.45					2021	Harvest specifications not yet available; will be based on rebuilding analysis reviewed by SSC GFSC (late Sept) and SSC in November. Stock defined as CA (S of 42), apportioned to complex.
Quillback	S of 4010	2 (Year Based)	0.45					2021	Harvest specifications not yet available; will be based on rebuilding analysis reviewed by SSC GFSC (late Sept) and SSC in November. Stock defined as CA (S of 42), apportioned to complex.
Rex Sole	CW	2 (Year Based)	0.40	0.238	5,205.59	3,966.66		2023	OFL projected using a 30% SPR harvest rate in the 2023 data moderate assessment (Table vi, pg xiv).
Chilipepper	N of 4010	1 (Year Based)	0.45					2015	Request for catch-only projection for November 2023 (2025-2026 values).
Greenspotted	42 - 4010	2 (Year Based)	0.45	0.220	88.44	69.70	69.27	2011	2024 OFL and ABC values.
Vermilion Rockfish	N of 42	1 and 2 (Year Based)	0.45	0.069	13.97	13.01	13.01	2021	OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 6 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).
Vermilion	42 - 4010							2021	Harvest specifications not yet available, anticipated by November. Stock defined as CA (S of 42), apportioned to complex. SSC will need to combine assessments to develop harvest specifications and harvest control rule.
Greenspotted	4010 - 3427	2 (Year Based)	0.45	0.220	42.58	33.55	33.12	2011	2024 OFL and ABC values.
Greenspotted	S of 3427	2 (Year Based)	0.45	0.220	45.86	36.14	36.14	2011	2024 OFL and ABC values.

Stock/Complex	Area	Category	P*	Buffer	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Vermilion	S of 4010							2021	Harvest specifications not yet available, anticipated by November. Stock defined as CA (S of 42), apportioned to complex. SSC will need to combine assessments to develop harvest specifications and harvest control rule.

Table 2. 2026 harvest specifications (mt) and stock category designations for west coast groundfish stocks and stock complexes under default harvest control rules. Specifications not yet available in yellow highlight. Blue highlight = defined groundfish stocks (Amendment 31).

Stock/Complex	Area	Category	P*	Buffer	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Yelloweye Rockfish	CW	1 (Year Based)	0.40	0.183	108.30	88.50	56.60	2017	OFL based on the 2023 catch-only update of the 2017 rebuilding analysis (Table 1, Agenda Item G.2 Supp Revised Attachment 15 Sept 2023).
Black Rockfish	WA	1 (Year Based)	0.45	0.070	259.38	241.22		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).
Black Rockfish	CA	1 (Year Based)	0.45	0.070	265.30	246.80		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 65, pg 142).
Canary Rockfish	CW	1 (Year Based)	0.45	0.070	654.71	608.88		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xvi).
Chilipepper	S of 4010	1 (Year Based)	0.45					2015	Request for catch-only projection for November 2023 (2025-2026 values).
Petrale Sole	CW	1 (Year Based)	0.45	0.070	2,424.00	2,255.00		2023	OFL projected using a 30% SPR harvest rate in the 2023 full assessment (Table 30, pg 75).
Sablefish	CW	1 (Year Based)	0.45	0.070	37,310.00	34,699.00		2023	OFL projected using a 45% SPR harvest rate in the 2023 limited update assessment (Table vii, pg xvi).
Sablefish	S of 36	1 (Year Based)	0.45	0.070				2023	
Sablefish	N of 36	1 (Year Based)	0.45	0.070				2023	
Shortspine Thornyhead	CW	2 (Year Based)	0.40	0.253	962.46	718.96	713.47	2023	OFL projected using a 50% SPR harvest rate in the 2023 data moderate assessment (Table 7, pg 42).

Stock/Complex	Area	Category	P*	Buffer	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Shortspine Thornyhead	S of 3427	2 (Year Based)	0.40	0.253				2023	
Shortspine Thornyhead	N of 3427	2 (Year Based)	0.40	0.253				2023	
Widow Rockfish	CW	1 (Year Based)	0.45	0.087	11,382.00	10,392.00		2019	OFL based on the 2023 catch-only update of the 2019 update assessment (Table 2; Agenda Item G.2 Attachment 14 Sept 2023).
Yellowtail Rockfish	N of 4010	1 (Year Based)	0.45					2017	Request for catch-only projection by November 2023 (2025-2026 values).
Black Rockfish	OR	1 (Year Based)	0.45	0.070	377.12	350.50		2023	OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).
Copper Rockfish	N of 42	2 (Year Based)			18.63	15.82	15.82	2021	OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 5 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).
Copper Rockfish	CA	1 (Year Based)	0.45	0.070	145.30	135.20	133.10	2023	OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (Table xiv, pg xxvii).
Copper	42 - 4010	1 (Year Based)	0.45	0.070			6.70	2023	
Copper	S of 4010	1 (Year Based)	0.45	0.070			126.40	2023	
Quillback	42 - 4010	2 (Year Based)	0.45					2021	Harvest specifications not yet available; will be based on rebuilding analysis reviewed by SSC GFSC (late Sept) and SSC in November. Stock defined as CA (S of 42), apportioned to complex.
Quillback	S of 4010	2 (Year Based)	0.45					2021	Harvest specifications not yet available; will be based on rebuilding analysis reviewed by SSC GFSC (late Sept) and SSC in November. Stock defined as CA (S of 42), apportioned to complex.
Rex Sole	CW	2 (Year Based)	0.40					2023	Harvest specifications not yet available for 2026; values from the 2023 assessment with P*=0.4 will be calculated for November 2023.
Chilipepper	N of 4010	1 (Year Based)	0.45					2015	Request for catch-only projection for November 2023 (2025-2026 values).
Greenspotted	42 - 4010	2 (Year Based)	0.45	0.227	88.44	69.70	69.27	2011	2024 OFL and ABC values.

Stock/Complex	Area	Category	P*	Buffer	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Vermilion Rockfish	N of 42	1 and 2 (Year Based)	0.45	0.074	13.65	12.64	12.64	2021	OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 6 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).
Vermilion	42 - 4010							2021	Harvest specifications not yet available, anticipated by November. Stock defined as CA (S of 42), apportioned to complex. SSC will need to combine assessments to develop harvest specifications and harvest control rule.
Greenspotted	4010 - 3427	2 (Year Based)	0.45	0.227	42.58	33.55	33.12	2011	2024 OFL and ABC values.
Greenspotted	S of 3427	2 (Year Based)	0.45	0.227	45.86	36.14	36.14	2011	2024 OFL and ABC values.
Vermilion	S of 4010							2021	Harvest specifications not yet available, anticipated by November. Stock defined as CA (S of 42), apportioned to complex. SSC will need to combine assessments to develop harvest specifications and harvest control rule.

Scientific and Statistical Committee's Groundfish Subcommittee Report on 2023 Stock Assessments and Harvest Specifications

Pacific Fishery Management Council
DoubleTree by Hilton Spokane City Center
Salon 1
322 N Spokane Falls Court
Spokane, WA 99201
509-455-9600

September 7, 2023

Overview

The Groundfish Subcommittee (GFSC) of the Scientific and Statistical Committee (SSC) met on September 7, 2023, to discuss harvest specifications for 2025 and beyond resulting from 2023 stock assessments, revisions to specifications from prior assessments to address errors and discuss proposed stock assessment methodology review topics. A list of GFSC attendees is provided in Appendix 1. An overview of the GFSC deliberations and recommendations are provided to inform SSC discussions regarding endorsement of harvest specifications for 2025 and beyond.

Initial Harvest Specifications and Management Measure Actions for 2025-2026: Review of proposed 2025-2026 overfishing limits (OFLs), acceptable biological catch (ABC) based on SSC default sigmas for each stock category and P* (P-star) values from 2023-2024.

The GFSC reviewed 1.) the proposed overfishing limits (OFLs) for 2025 and 2026 under default harvest control rules, 2.) the recommended category designation for each stock, and 3.) the constant or time-varying sigma values used to calculate annual acceptable biological catch (ABC) buffers. The GFSC focused the review on stocks that are highlighted in yellow and blue in Agenda Item G.6 Attachment 1.

The GFSC noted:

- Category designations for Oregon black rockfish and California copper rockfish should be category 1, not category 2.
- Greenspotted rockfish will use the equilibrium maximum sustainable yield (MSY) (95.7 mt) as the basis for the OFL with category 3 buffer as the basis for the ABC. By-area ABCs will be available in November.
- The rex sole default P* is 0.4 with a 0.238 buffer in 2025, which results in 3,966 mt ABC for 2025. The OFL and ABC for 2026 will be recalculated and available in November. The stock assessment team used P*=0.45 as default, which needs to be corrected in the stock assessment document.
- The yellowtail rockfish OFL and ABC for north of 40°10' N. lat. are not yet available. The GFSC recommends that a catch-based projection be requested by the Council in September and conducted for review by the GFSC at the mop-up review (scheduled September 25-29, 2023).

- The quillback rockfish OFL and ABC will be based on the rebuilding analysis, which will be reviewed by the GFSC at the mop-up review and be available for review by the SSC in November.
- The 2019 catch-only projection for chilipepper rockfish was based on the 2015 model, but it should have used the 2017 model for the projection. The 2017 model corrected the errors in historical catches. A new projection using the 2017 model will be conducted while the category designation is still based on the 2015 assessment. Thus, the OFL and ABC will be available in November.
- For vermilion rockfish, the Council adopted new stock definitions in Amendment 31, with Washington and Oregon vermilion rockfish as the northern stock and California vermilion rockfish as a separate stock. In 2021, four assessments with different boundaries (WA, OR, N. CA, and S. CA) from those defined in Amendment 31 were conducted. Methods for combining assessments were described in the June 2023 Agenda Item H.3.a NWFSC Report 1. For the northern stock, the Washington assessment was designated category 2 and the Oregon assessment designated category 1. Combined OFLs for the northern stock (Washington and Oregon) in 2025 and 2026 are 13.97 mt and 13.65 mt, respectively. Results for the California stock will be available in November.
- While two sub-area assessments (north and south of Point Conception, California (34°27′ N. lat.)) were conducted in 2023, copper rockfish in California was defined as one statewide stock in Amendment 31. These two sub-area assessments have the same category designation and buffer. OFLs and ABCs from both assessments are combined for a stock-wide OFL and ABC.
- Projected 2025 OFL for sablefish based on the 2023 limited update assessment is more than triple the amount of the adopted 2024 OFL. The GFSC recommends the stock be assigned to category 1 with a default sigma of 0.5. The Council may consider a lower P* value to account for any perceived risk from having only observed the strong recruitment in 2020 and 2021, resulting in the increases observed during two years of fishery and survey data.

Harvest Specifications Technical Corrections and Inseason Adjustments – Final Action: Review of technical corrections to OFL/ABC/ACL.

The GFSC discussed the documentation of several technical corrections identified for the 2023-2024 Harvest Specifications, as described and documented in Agenda Item G.8.a Supplemental Revised Attachment 1 and Supplemental Attachment 5. Members of the Groundfish Management Team (GMT) and biologists from the National Marine Fisheries Service (NMFS) West Coast Regional Office were on hand to provide additional details regarding the corrections. The GFSC's task was to understand the nature of the corrections and to verify that the corrections are appropriate.

In Attachment 1, five corrections were identified for various 2024 Harvest Specifications, as related to OFL and ABC values for canary, darkblotched, squarespot, and yelloweye rockfish, and the spatial allocation of ACL values for sablefish. For both canary and darkblotched rockfish, the 2019 catch-only projections were used instead of the updated 2021 catch-only

projections, resulting in OFL and ABC values that were lower than the correct estimates. For squarespot rockfish, the 2021-2022 harvest specifications were repeated in 2023-2024 instead of being updated with the new stock assessment projections, resulting in OFL, ABC, and ACL values substantially higher than they should be in 2023-2024. Fortunately, squarespot is a modest component of the complex within which it is managed, consequently the overall scale of the corrections are modest. For yelloweye rockfish, the adopted 2023-24 harvest specifications were higher than they should have been, based on the rebuilding plan, thus the 2024 OFLs, ABCs and ACLs will be lower for the corrected values. For sablefish, the OFL and ABC values were correct, however the distribution fractions for allocating the ACLs north and south of 36° N. lat. were not updated with recent survey data, resulting in minor revisions to those values for 2024.

Attachment 5 describes the origin of errors made in the projection of OFLs and ABCs from the 2017 yellowtail rockfish (north of 40° 10' N. lat.) stock assessment, in which 2017 and 2018 catch estimates were inadvertently based on default harvest control rules in the model rather than adopted ABC values for that management cycle. This contributed to other procedural errors further downstream. Correcting these errors results in a modest reduction of allowable catches.

The GFSC recommends that the SSC endorse the revised values in Revised Attachment 1 and Attachment 5 for the 2024 management cycle. The GFSC notes that the values in the review materials reflect what the correct values should have been for 2023, but there is no ability to revise these values and associated management measures, given that 2023 is nearly over. The GFSC notes that for yellowtail rockfish north of 40° 10' N. lat., a more appropriate correction could be to request a new catch-based projection using the observed catch values since the 2017 assessment was adopted. This would avoid an overestimation of actual removals relative to what the "correct" projections from the 2017 assessment would have been, which would consequently result in lower allowable catches in 2024 and beyond. The GFSC was supportive of this approach, and members of the GMT and stock assessment analysts from the NMFS Northwest Fisheries Science Center informally agreed that this approach would be both feasible and appropriate.

The GFSC, along with Council staff and members of the GMT also discussed the desire to develop better safeguards and mechanisms for avoiding such errors in future management specifications cycles. It was noted that the recently developed harvest specifications database for managing OFLs and ABCs ("spex database") should be helpful, as will the recent addition of documentation citing specific sources of the values for review and adoption. However, additional safeguards might be possible that would further reduce the risk of propagating errors.

Stock Assessment Methodology Review – Final Topics

The GFSC discussed prioritization of potential stock assessment methodology review and workshop topics for completion in 2024. Only one proposal for a methodology review has been submitted from the Northwest Fisheries Science Center for development of ageing methods for groundfish using Fourier Transformed Near-Infrared Spectrophotometry (FT-NIRS) to increase throughput with limited personnel (Agenda Item G.3.a Supplemental NWFSC Report 1, September 2023). The GFSC discussed whether the methods are best reviewed by the SSC as the methods and efforts to implement them are national in scale with units in each Science Center.

Alternative venues for review are not immediately available, though the Committee of Age Reading Experts (CARE) has recently held a workshop on the topic. Members of CARE and ageing experts identified by the Center for Independent Experts (CIE) would provide valuable input if included on the review panel.

While the proposal calls for focus on stocks to be assessed in 2025, if a review is conducted, the GFSC recommends that the suite of species selected for the FT-NIRS methodology review reflect potential variability in ageing error with life history characteristics including flatfish, roundfish and *Sebastes spp*. In addition, a range of species that are relatively easy and difficult to age, as well as short-lived and long-lived species or other pertinent factors potentially affecting ageing error to provide meta-analytical perspective to inform which species might be viable candidates in the future. Comparisons of ageing error for traditional ageing methods and FT-NIRS should be undertaken for each species to evaluate the relative precision of the methods.

An outstanding methodology review approved for analysis in 2019 involved development of harvest control rules for elasmobranchs using a meta-analytical approach to account for their lower productivity relative to other groundfish species subject to the default SPR harvest rate of 0.5. Initial efforts did not identify appropriate proxy species to inform a meta-analytical approach. While this remains a need for future research, sufficient data are not yet available. Additional potential future topics discussed included evaluating methods that address the potential for hook saturation in hook and line surveys and the appropriate treatment of sex ratio data associated with composition data as combined or separate for each sex. The latter would focus on analyses to evaluate when the alternatives in Stock Synthesis are most appropriate and provide criteria for application in the groundfish Terms of Reference and Accepted Practices documents. It was noted that while a workshop on hook and line surveys was conducted in 2022, Oregon Department of Fish and Wildlife's marine reserves program indices of abundance were not reviewed, though used in the Oregon black rockfish assessment. The SSC can consider whether a methodology review on that topic should be conducted in the future to provide approval for the methods to be employed in the future.

The GFSC also discussed the role of workshops in the Council process and the need for inclusion of a call for proposals for workshops as well as methodology reviews in September of odd years. Implementation of COP 25 provided a process for methodology reviews, but the process for selecting workshops was not specified. Further clarification about the process for workshops would be beneficial. Workshops have been proposed in the past that were approved by the Council, but are still outstanding. These topics include considerations of how to appropriately account for closed areas in stock assessments, and another on how to incorporate remotely operated vehicle (ROV) data into stock assessments. Progress has been made in accounting for closed areas through time blocking selectivity for composition data to account for periods when age/size classes were limited and weighting indices by the proportion of habitat inside and outside closed areas. While the workshop on uses of ROV data in stock assessments may provide some benefit, a methodology review has already been conducted and the methods have been approved for use in stock assessments. An alternative workshop that could subsume this topic would be to focus on how to weight absolute abundance estimates from ROVs, the ODFW acoustic-visual survey and the swept area estimates of abundance from the West Coast Groundfish Bottom Trawl Survey relative to the remainder of the data in the stock assessment.

The SSC can discuss prioritization of these workshops relative to other methodology reviews and workshops under consideration.

Appendix 1

Subcommittee Members in Attendance

Dr. Cheryl Barnes, Oregon State University/ODFW, Newport, OR
Dr. John Budrick (Chair), California Department of Fish and Wildlife, San Carlos, CA
Dr. John Field, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Chris Free, University of California at Santa Barbara, Santa Barbara, CA
Dr. Kristin Marshall, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Tommy Moore, Northwest Indian Fisheries Commission, Forks, WA
Dr. Jason Schaffler, Muckleshoot Indian Tribe, Auburn, WA
Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA

G. Groundfish Management

7. Final Trawl Cost Project Phase 1 Report and Next Steps for the Trawl Catch Share and Allocation Reviews

The Scientific and Statistical Committee (SSC) received a presentation by Darrell Brannan of Brannan & Associates, LLC, on "A Comparative Case Study for the West Coast Groundfish Trawl Catch Share Program." The report evaluates how the program's design elements affect program objectives and costs. The information in the report will be used to inform the upcoming trawl catch share program and intersectoral allocation reviews.

The SSC appreciates the analyst's effort in addressing the SSC Economics Subcommittee comments from the May 11, 2023 meeting. The report is sufficient as a preliminary analysis of program costs and preparation for future work. The SSC notes that the Economic Data Collection (EDC) program was essential to this analysis and will be similarly important to future evaluations of potential cost savings and program modifications for the trawl catch share program.

The SSC has the following recommendations:

- The comments from individual stakeholders are not appropriate for drawing conclusions. The sample size is too small, and industry outreach was open-ended and not structured to elicit the information needed to inform the specifics of this analysis. Phase 2 of the study should aim to improve industry participation.
- The focus of Phase 2 should not be limited to only those program elements that could reduce costs. Instead, it should consider any program elements that could be adjusted to improve the program's economic benefits.

SSC Notes

Electronic monitoring and its cost-effectiveness could be an important area to emphasize for future economic benefits of the groundfish trawl sector program.

G. Groundfish Management

8. Harvest Specifications Technical Corrections and Inseason Adjustments – Final Action

The Scientific and Statistical Committee (SSC) reviewed and discussed the "Joint Council Staff and NWFSC report on Technical Corrections to the 2023-24 Harvest Specifications" (Agenda Item G.8 Attachment 1). For canary and darkblotched rockfish, the 2019 projections were carried forward for the 2023-24 harvest specifications rather than using the 2021 updated catch-only projections. For squarespot rockfish, the 2021-22 harvest specifications were repeated in 2023-24 rather than being updated, and since squarespot rockfish is managed within the shelf rockfish complex, those harvest specifications also contain the error. For sablefish, the 5-year rolling average biomass estimate by area from the NWFSC West Coast Bottom Trawl Survey from the 2021-22 cycle was used to allocate ACL by area rather than an updated 5-year rolling average. For yelloweye rockfish, the adopted 2023-24 harvest specifications were higher than they should have been, based on the rebuilding plan, thus the 2024 OFLs, ABCs and ACLs will be lower for the corrected values.

The SSC endorses the corrected harvest specifications for the aforementioned rockfish (see Agenda Item G.8 Supplemental REVISED Attachment 1 and table below) and updated 5-year rolling average and its application for sablefish.

The SSC reviewed and discussed "Joint Council Staff and Northwest Fishery Science Center Report on Technical Corrections to the 2023-2024 Harvest Specifications for Yellowtail Rockfish North of 40° 10′N. Lat." (Agenda Item G.8.a Supplemental Attachment 5), which describes how inadvertent assumptions propagated errors into the projections used in specifications.

The SSC endorses the corrected harvest specifications for yellowtail rockfish North of 40° 10′ N. lat. (Table 2 in Agenda Item G.8.a Supplemental Attachment 5 and table below) for 2024.

Improvements underway, such as the harvest specifications database for managing OFLs and ABCs and documentation of the sources of harvest specification values used for review and adoption should reduce these types of errors in the future. The SSC encourages continued efforts to reduce errors in this complex process.

Corrected 2023-2024 Harvest Specifications (mt)	2023			2024		
	OFL	ABC	ACL	OFL	ABC	ACL
Canary Rockfish	1472	1338	1338	1434	1296	1296
Darkblotched Rockfish	894	820	820	857	782	782
Squarespot Rockfish	5.3	4.7	4.1	6	5.2	4.8
Shelf Rockfish Complex (N of 40°10' N. lat)	1829	1464	1463	1833	1464.6	1464.2
Yelloweye Rockfish	89.6	75.3	52.3	91.2	75.9	53.3
Yellowtail Rockfish (N of 40° 10' N. lat.)				5795	5291	5291

SSC Notes

"The GFSC notes that for yellowtail rockfish north of 40° 10′ N. lat., a more appropriate correction could be to request a new catch-based projection using the observed catch values since the 2017 assessment was adopted. This would avoid an overestimation of actual removals relative to what the "correct" projections from the 2017 assessment would have been, which would consequently result in lower allowable catches in 2024 and beyond. The GFSC was supportive of this approach, and members of the GMT and stock assessment analysts from the NMFS Northwest Fisheries Science Center informally agreed that this approach would be both feasible and appropriate" [GFSC statement], but during SSC discussion it was agreed that the timeline for getting regulations written up might favor using the values from Attachment 5 for 2024 and using the new values for projections used in 2025-26.

Additional safeguards might be possible that would further reduce the risk of propagating errors.

These changes increase canary OFLs slightly, but the new 2023 assessment will drop them.

We are not trying to specify ACLs, we just include them to have the values all in one place.

H. Administrative Matters

6. National Standards 4,8,9 Considerations and National Standard 1 Technical Guidance

Advance Notice of Proposed Rulemaking on National Standards 4, 8, and 9

The SSC does not take a position on the need to revise National Standards 4, 8, and/or 9, as this is primarily a policy decision. If National Standard 8 is revised, care is needed with the definitions of engagement versus dependence. Dependence is typically calculated as a per capita metric, and so can be very sensitive to population flux in small communities even if engagement remains stable. If National Standard 9 is revised, there should be consideration of bycatch definitions that do not revolve around species. For example, a single species might be bycatch in some fisheries but not others, and something akin to bycatch might occur for a subset of a species such as unmarked fish in mark-selective fisheries, fish outside legal size limits, or one sex in a fishery with sex-specific retention.

National Standard 1 Technical Guidance

At its June 2023 meeting, the Scientific and Statistical Committee (SSC) received a presentation from Richard Methot (NOAA Fisheries Directorate) and reviewed a draft NOAA Technical Memorandum entitled "Technical Guidance for Estimating Status Determination Reference Points and their Proxies in Accordance with the National Standard 1 Guidelines", now available in the September 2023 briefing book as Agenda Item H.6 Attachment 5. The Technical Guidance summarizes a substantial body of ongoing work, and contains suggested approaches rather than binding requirements. The SSC identified numerous potential additions or modifications for the document, which are appended to the end of this report.

The SSC also identified cases where current PFMC practices are not entirely consistent with the technical guidance. Given the non-binding nature of the guidance, these inconsistencies are not necessarily problematic, but divergences from the general guidance should be recognized and confirmed to be scientifically defensible. These differences include:

- Groundfish and coastal pelagic species assessments generally parameterize the Beverton-Holt stock-recruit relationship using steepness and R_0, not alpha and beta (p. 9). The SSC recognizes that switching parameterizations would be a major change with associated costs and benefits.
- Steepness is pre-specified in many groundfish and coastal pelagic species assessments (p. 10).
- F_{SPR} proxies less than 40-45% are used in some cases (p. 12).
- Fishing mortality rate in groundfish assessments is often reported as 1-SPR, but not fishing intensity F as well (p. 25).
- Salmon management uses multi-year overfished status determinations, but the guidance only discusses multi-year overfishing status determinations (p. 28).

Recommended additions or modifications to the technical guidance document:

- Consider grouping sections into well-established approaches (e.g., age- or length-structured assessments, biomass dynamics approaches) and emerging issues or ongoing work (e.g., some data-limited approaches, updating reference points for changing environmental conditions).
- For well-established approaches, cite applied work products (e.g., accepted stock assessments) that are good examples of the approach in addition to the academic references already cited. For emerging issues, there may need to be greater reliance on academic citations.
- Consider adding guidance on determining status when combining assessments from multiple areas, especially when assessment categories differ among areas. This is an important issue for the PFMC and potentially other regions, and there is value in a consistent national approach.

- Discuss multi-year approaches to overfished status determinations, not just overfishing status determinations. The PFMC already does this for salmon.
- Discuss the issue of "retrospective overexploitation" where harvest is less than the overfishing limit established at the time, but a future analysis reveals that the fishing mortality rate exceeded the maximum fishing mortality threshold. Consider identifying appropriate responses (if any) when this is detected.
- Provide guidance on identifying conditions that indicate a sufficient degree of quasi-stability to support applying data-limited, SPR-based, biological composition methods to status determination (pp. 19-21).
- Consider identifying data-limited approaches that are clearly not suitable and should be excluded from consideration, while recognizing that any list of suitable approaches could quickly become out of date.
- Consider adding some specific approaches to the Biomass Dynamics Models section, for example delay-difference models and Depletion-Based Stock Reduction Analysis. Some of these methods are discussed in the "catch only" methods section, yet they do have an underlying biomass dynamic estimation that includes life history information and can provide status determination criteria in certain situations.
- Add discussion of fishery-induced evolution to the consideration of fishery impacts.
- Discuss the potential of close-kin mark-recapture to provide estimates of demographic rates such as natural mortality and potentially fecundity in addition to estimates of absolute abundance.
- The section on "Fishery Technological Characteristics" is very dense and contains concepts that could be explained in more detail.
- Consider softening the language that fixed parameters are "ill-advised" (p. v).
- Discuss approaches suited to short-lived species, including semelparous species such as salmon.

SSC Notes

Although divergences from the Technical Guidance are acceptable, the SSC sees merits (and challenges) in moving toward higher consistency with the Guidance. For example, the SSC recognizes significant concerns associated with assuming the value of steepness, and has supported exploration of a variety of forms to the stock-recruit relationship as well as alternative parameterizations of the Beverton-Holt, such as the work described in the 2017 Productivity Workshop (Agenda Item I.2 Attachment 2 March 2017).

H. Administrative Matters

10. Future Council Meeting Agenda and Workload Planning

The Scientific and Statistical Committee (SSC) discussed workload planning and has the following updates to its June 2023 statement under this agenda item.

The SSC anticipates conducting its November 2023 and March 2024 meetings in person and the April 2024 meeting remotely. The SSC requests that if the April 2024 SSC meeting is remote, as currently suggested by the Council, the SSC meet Thursday and Friday (April 4 and 5) to accommodate those members who also participate in the Salmon North of Falcon process, as well as those members who have limited access to workspace on the weekends.

The SSC Ecosystem-based Management and Groundfish Subcommittees will hold a meeting with participation from the Ecosystem Workgroup (EWG) and the Ecosystem Advisory Subpanel (EAS) to review the proposed risk table approach and two pilot risk tables being developed under the new Fishery Ecosystem Plan (FEP) initiative as a webinar the afternoon of September 21, 2023.

The SSC Coastal Pelagic Species (CPS) Subcommittee will hold a meeting as a webinar September 22, 2023 to review accepted practices guidelines for CPS stock assessments with participation from the CPS Management Team (CPSMT) and the CPS Advisory Subpanel (CPSAS).

The SSC will participate in the Groundfish Mop-up Panel during the week of September 25-29, 2023 with participation from the SSC Groundfish Subcommittee members, the Groundfish Management Team (GMT), and the Groundfish Advisory Subpanel (GAP). The SSC recommends holding this as a webinar and expects only one day should be needed.

The SSC will hold a Salmon Methodology Review on October 11-12, 2023 as a webinar with participation from the SSC Salmon Subcommittee, the Salmon Technical Team (STT), and the Model Evaluation Workgroup (MEW).

The SSC Economics and Groundfish Subcommittees recommend holding a follow-up Groundfish Methodology Review of the Sablefish Trip Limit Model on October 12, 2023 in the afternoon as a webinar. This webinar would address comments of the SSC Subcommittees from the prior review meeting held May 9, 2023. Recommendations will be reported to the full SSC at the November 2023 meeting, for any final endorsement recommendations to the Council, prior to the model being used for harvest specification analysis.

The SSC Economics Subcommittee recommends holding a webinar October 24, 2023 in the afternoon to review the Sablefish Gear Switching Economic Analysis, anticipated on the November 2023 Council Agenda.

The SSC Groundfish Subcommittee proposes holding a stock assessment process review meeting during the week of January 15-19, 2023, as a one-day webinar. Participants in the 2023 assessment process should be included.

The SSC Groundfish Subcommittee proposes holding a two-day meeting to review revisions to the Terms of Reference and Accepted Practices Documents for the next stock assessment cycle (2025-2026) as a webinar to be held during the week of February 5-9, 2023.

Members of the SSC will conduct a stock assessment review (STAR) panel for the Pacific sardine stock assessment from February 20-22, 2024 to be held in La Jolla, California and chaired by Dr. Andre Punt with participation from the SSC, CPSMT and CPSAS.

The Council Coordination Committee's (CCC) Scientific Coordination Subcommittee meeting (SCS8) will be hosted by the New England Fishery Management Council and will be held during the week of August 26, 2024 in Boston, MA. At least two members of the PFMC SSC are expected to attend.

The SSC proposes holding a Groundfish Methodology Review in June of 2024 to consider the use of Fourier Transformed Near-Infrared Spectrophotometry (FT-NIRS) method for estimating groundfish ages to be utilized in future stock assessments.

The SSC recommends participation in the next Sablefish Management Strategy Evaluation (MSE) Workshop in 2024 at a time and place to be determined with participation from the SSC Groundfish Subcommittee, the GMT, and the GAP and possibly the SSC Economics Subcommittee.

The SSC proposes holding a Workshop to Develop Alternative Harvest Control Rules for Pacific Spiny Dogfish in 2024 at a time and place to be determined.

Proposed Workshops and SSC Subcommittee Meetings for 2023 and Beyond							
Workshop/Meeting		**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
1	Ecosystem-Based Management Subcommittee Meeting with Groundfish Subcommittee to review FEP initiative products	September 21, 2023	Council/Webinar	Ecosystem and Groundfish Subcommittee Members	NA	EWG EAS	Bellman
2	CPS Subcommittee Meeting to develop Accepted Practices Guidelines for Stock Assessments	September 22, 2023	Council/Webinar	CPS Subcommittee Members	NA	CPSMT	Bellman Doerpinghaus
3	Groundfish Mop-up Panel	(1 Day TBD) Sept 26-29, 2023	Council/Webinar	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman
4	Salmon Methodology Review	October 11-12, 2023	Council/Webinar	Salmon Subcommittee Members	NA	STT MEW	Bellman Ehlke
5	Economics and Groundfish Subcommittees Sablefish Trip Limit Model Methodology Review	October 12 (pm), 2023	Council/Webinar	Economics and Groundfish Subcommittees	NA	GMT	Bellman
6	Economics Subcommittee Sablefish Gear Switching Economic Analysis Review	October 24 (pm), 2023	Council/Webinar	Economics Subcommittee Members	NA	NA	Bellman Seger
7	Groundfish Stock Assessment Process Review	(1 Day TBD) January 15-19, 2024	Council/Webinar	Groundfish Subcommittee Members/STAT	CIE Continuity	GMT GAP Advisors	Bellman
8	Groundfish Review of Revisions to the Terms of Reference and Accepted Practices Documents (2025-2026)	(2 Day TBD) February 5-9, 2024	Council/Webinar	Groundfish Subcommittee Members	Science Center Staff	GMT GAP Advisors	Bellman

Proposed Workshops and SSC Subcommittee Meetings for 2023 and Beyond							
Workshop/Meeting		**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
9	CPS STAR Panel for Pacific Sardine	February 20-22, 2024	Council/La Jolla, CA	Punt - chair TBD	CIE TBD	CPSMT CPSAS	Doerpinghaus Bellman
10	Groundfish Methodology Review of FT-NIRS method for estimating fish ages utilized in stock assessments	June 2024	Council/TBD	Groundfish Subcommittee Members	CARE	GMT	Bellman
11	CCC Scientific Coordination Subcommittee Meeting (SCS8)	August 26-29, 2024	NEFMC/ Boston, MA	SSC members TBD	NA	NA	Bellman
12	Sablefish MSE Workshop	2024 TBD	TBD	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman
13	Proposed Workshop to Develop Alternative Harvest Control Rules for Spiny Dogfish	2024 TBD	TBD	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman

SSC Subcommittee Assignments

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Alan Byrne	**John Budrick**	**André Punt**	**John Field**	**Cameron Speir**	**Kristin Marshall**
John Budrick	Cheryl Barnes	John Budrick	Cheryl Barnes	Chris Free	Cheryl Barnes
Owen Hamel	John Field	Alan Byrne	Michael Hinton	Michael Hinton	John Field
Galen Johnson	Chris Free	John Field	Dan Holland	Dan Holland	Chris Free
Tommy Moore	Owen Hamel	Owen Hamel	Kristin Marshall	André Punt	Dan Holland
Will Satterthwaite	Kristin Marshall	Michael Hinton	André Punt	Matthew Reimer	Galen Johnson
Jason Schaffler	Tommy Moore	Will Satterthwaite	Matthew Reimer		Tommy Moore
Ole Shelton	André Punt	Tien-Shui Tsou			André Punt
Cameron Speir	Jason Schaffler				Matthew Reimer
Tien-Shui Tsou	Tien-Shui Tsou				Will Satterthwaite
					Ole Shelton
					Cameron Speir

Bold denotes Subcommittee Chairperson

ADJOURN

PFMC
11/08/23